

Figure 1

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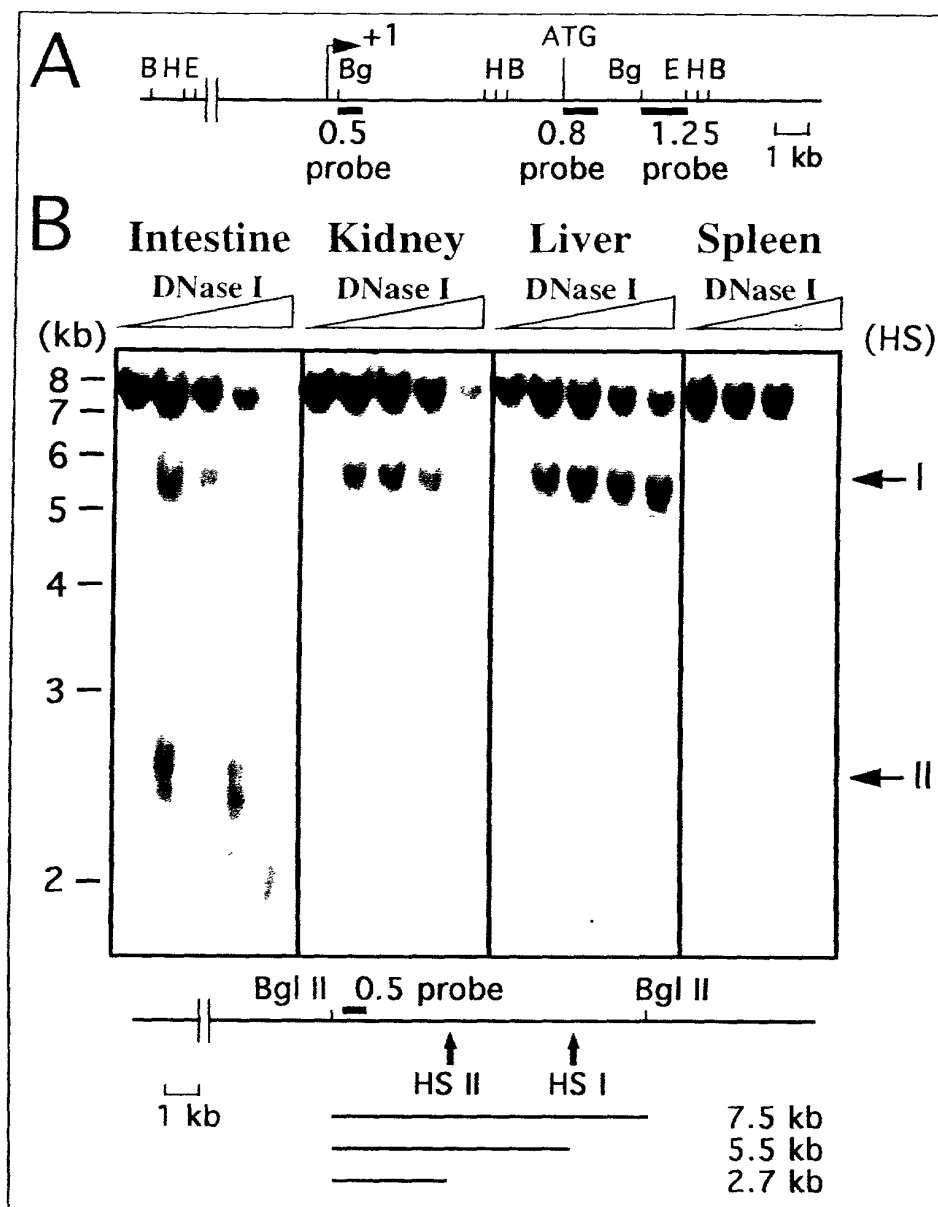


Figure 2 (a)

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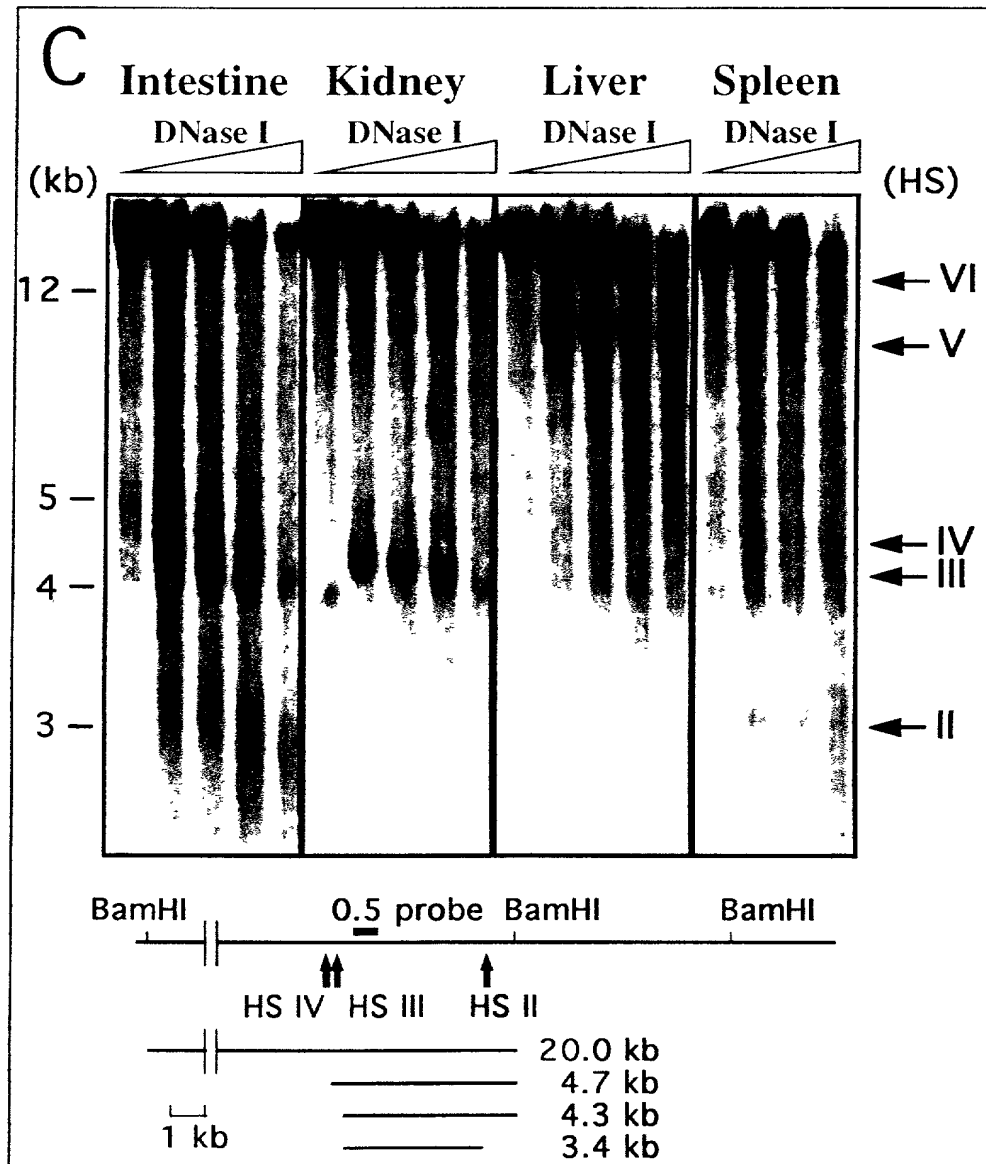


Figure 2 (b)

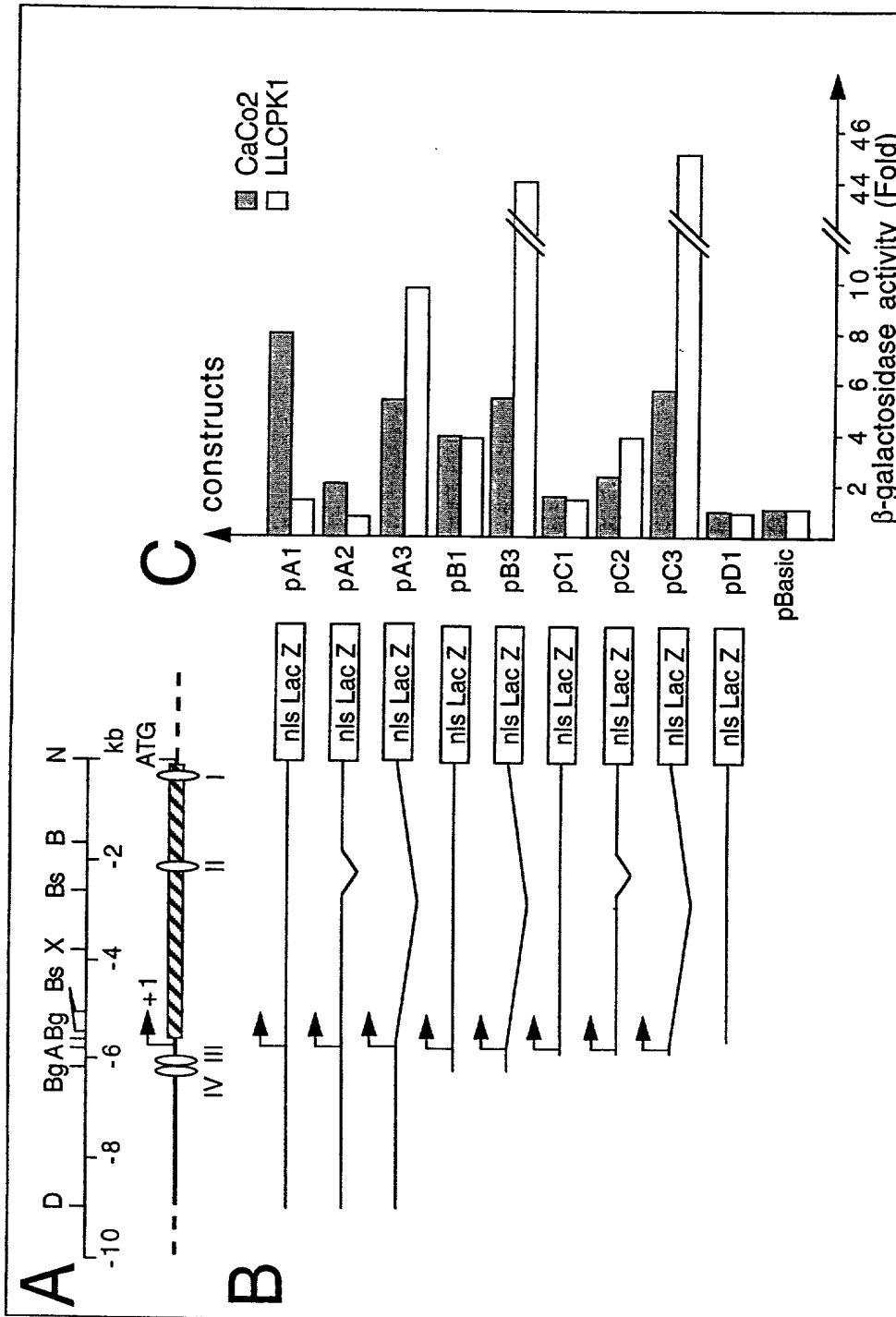


Figure 3

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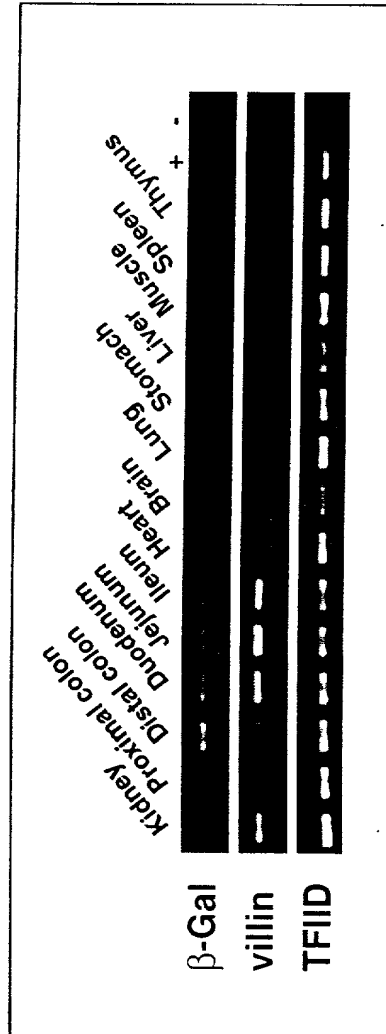


Figure 4

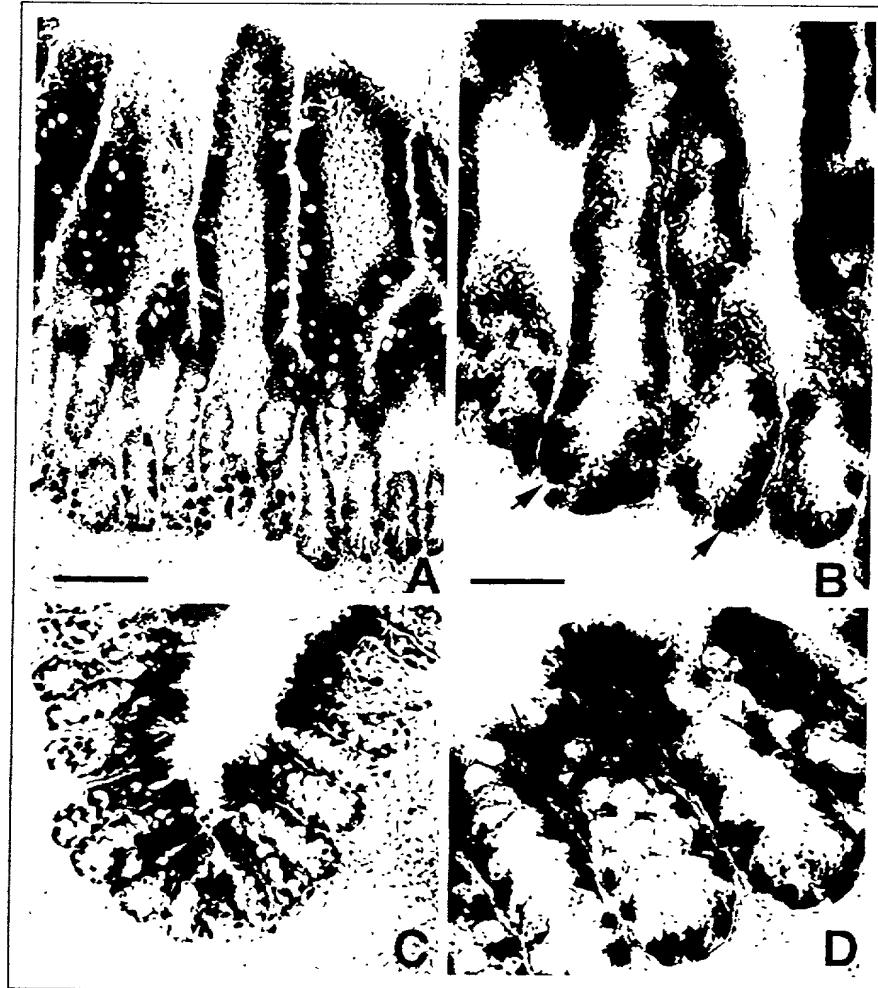


Figure 5

Genomic sequence of the mouse villin gene regulatory sequences

GATCTGGTGC ACCAAGGACA CTGTGGTCCC AGCACTGGGG AGGTGGAGGG AGGAGGGTCA 60
GAAGTTTAAAG GTCATCCTTG GTTACATAGC AAGGTTTCAG CCAGCTTCAG CTACATGAAA 120
CCTTTGTTTG TTTGTTTGTT TGTTTTAAAG CATTAATAAA TAATACCATA AGGAGGTTGG 180
CAGTGGTGGC AGACACCTTT AATTCCAGTA TTCAGGAGGC AGAAGCAGGC AGATCTCTGT 240
GAGTTCGAAG TCAGCCTAGT CTGCAAAGCT AGTTCAGGA TGGCAAGGGC TACACAGAGA 300
AACCTTGTCT CATAAAACCA AAGTAGTAGT AGTAGTAGTA ATGCCATAGA GAAAATTGGA 360
GTCCATTGAG GATGGACCAT CCTATAAGAT GATTCTCTTG ACCCAGGTAA GCTAATGTCA 420
TGGGGAAAGG GGATGGGACT GTCCTAGATT AAAAAGTGCT GAGGCGATGC CTATTCTCAA 480
TTTGATTCCA TATGAAAAGG CTGATAAGGC CCAAGAGAAG TGGAAGTGGG ACTCTGGACT 540
GAAGACGTGA CGGCCTTATA AACACTGGCA CTTATAAACA CTTATAAACA CTGGCACAGG 600
CGTTCAGGTT TGAAGATCAC TTTCAAACCA CAGAACAGAA AGTGCTCGCT CGTCCTCAGC 660
GTAGCGAGCA CTGGCTGCAG AAGAGTGATA TTTAGTGAAA GCTACCTTCA CAATATCTTT 720
GCACTTATCA CATAACGCTG TCAAATGTGC TAACTCCCTA GTCCACAGAT GGCTGTTACA 780
CTCGTTTCTG CTTTCCCATC TGGTTGACAT TTGTCAGAAC CAGAAATTAG AAATGTGGGT 840
ATTTATTTGT GTGCTGAGGA CACCATCCAG GGCTTTTCAC ATTTTCAGGCA CATGGTTTAC 900
TAACTGGGCT ACTTCTCCAA CGGTTTGAAA CCATTTGTTT TATATTTACT TATTTTGTGT 960
GCATGAGGTA GGCATGTATA CGTATGTATA GGAGTCATGC ATGTGGCTGC TACCTCAAA 1020
ATCATTGCAG ATCCCCAGCA AGTGAAGTCA CCGAGCGTTG TAAGTTGTTA TGTGGGACTG 1080
GGAGCCAAGG CTGGGTTCTC TGCAAGAGCA GCCAGTGGCC TTAACCATGG GACCAGCTCT 1140
CTAGGCCTAA GGTAATCTTT AGTTTTTTAA AAATATATAT TCTCAGCCGG GTGTGGTGGC 1200
ACACGCCTTT AATCCCAGCA CTTGAGAGGC TGAGGTGTAG GAATTATACA CACAGGCCAG 1260
CTGGGGTGCA GAGCTTGGCC CTGTTTTTTT TGTTTTTTCT TTATGTGCAC TGGTGTCTTA 1320
CCTGCGTGTA TGTCCGTGCA AGGGTGTGAG ATCCCTTGGA GCTGGAGTTA AAGACAGTTG 1380
TGATCACGCT GCCGTTACAG ATGCTGGAAA TTGAACCCAG GTGTCCCTAG AGAAGCAGCC 1440
AGTGCTCTTA ACTTCTGAGC CACCCCTCCA ACCCTGCTTT TAGAGACTCT TAACCTTTTG 1500
TGTAATGTGG GAACTGAGTG GATCTTGAC TACCAAGTG TGTGCTGCGC TGTAGCATCA 1560
CTGAGCCCGT ACCCACACGA CTAGTGGATA CAGTTTAAAG GCAAACACTT AACAATGACA 1620
ATAGTTGGAT AGAGTTTGAA TATAGTCCTG AGCTATTGGT TAGCGTGACC TTTGCTGTCC 1680
TTAGCATGTG CTGTGAGAAG ATAGAAAAAT GAAGACTTGA GTCTAGTCCT GGAACCCACA 1740
GAGGCAGGCG AGAACCCACT CCTGAAAGTT GTTCTCTGAG CTTACATAC AACTTCACAT 1800

FIGURE 6A

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AATAGTTACA ATGATAATAA TAATTAGTAA ATTCTTTTAA AAGGTATATG TTGGGAGGGA 1860
 GAGATGGCTC AGCTTCCAGG AGCACTTGCT GCTCTTGCAG AGGACCTAGA TTCAGTTCCC 1920
 AGGACTCATA TGGTGGCTCA CAGCCATCTG TAAATCCAGT TCCAGAGGGT TCCACACCCT 1980
 CTTCTGGCCT CCACAGGCAC CACATACATA GTACACAGAC ATACATGCAG GCAAAACACC 2040
 CATAACACA TAAATAAATA AGGAACTTA AAAGGTGCAT GTGTTGGTAA ACATTGTGCT 2100
 TACACATGCT GATTGAAGAC ATGTACAACG CACACACTGA AGAGGGATCT GGGGCTGGAG 2160
 AGATGGCTCA GCGGTTAAGA GCACTGACTG CTCTTCCGAA GGAAGGTCCT GAGTTCAAAT 2220
 CCTAGCAACC ACATGGTGGC TCACAACCAT CCATAATGAG ATCTGACACC CTCTTCTGGT 2280
 GCATCTGAAG ACAGCTGCAG AGCTACAGTG TACTTAGATA TACTAATAAA TAAATCTTTT 2340
 TTTAAAAAAA TGAAGAGGGA TCTGAGACAC CTCAAAGAG ATTATGAGCA GTGACTCAGC 2400
 GGTGATTATC TATCCTGGAG TTTTTCCTTT CCGCTTGGCT TGCAACTGGG TGGACAGACG 2460
 CCCCTTTTCA TTCACAAGAA CGGGTGCTAC ATTATTTCTG AACAAAACAG CACCTGCAGT 2520
 ATGTTTACTG TCCTTGCTGA CTATGAGCAC GCGCACGCGC GCGCGCACAC ACACACACAC 2580
 ACACACACAC ACACACACAC ACACACACAC ATTCACTCTC CAGAGCTCTT GGAAGGTCA 2640
 AGAAGAGGCT GCCCTCAAAC ACGATCTTCA TCTTTCCTC CTAAAGGAGA CCACGATTCC 2700
 AAGGTGGCAG AAGATCTACA GGGGGCAGAG GCAGGGAGGG GGAAGCAGGC CATGGTTTCC 2760
 AGAGACCTAC AGCAGAGGGC AGCAAGGCAG ATCCCCAGGT CCAGGGCAGG GAGGTGGAGG 2820
 CCCTTGTTCC GAGGAGAAGG CAGGCGGCAG AACAGGGTTC AAAGGCACAG GTTTATGGCA 2880
 GCTCATAAAA GTGGAGGTCG TGGCTCACTC AGAAAGGAGG AAGAAGGGAA AGGCCCTTGT 2940
 GCCCCTGAG CGAGGGTCAT GCTGAGTAGG AGAGATCTGC AGGGGTGCCA GGAGCCCCAC 3000
 CTGTCTGTCC CAAGGGAACC CCAAGTGTGA ACTCTGGCCT TGGGTGCTGA GTTCCAGCTA 3060
 CAAGACCCCA GGAGTCCTAC TCCATCCCCA TCCAGTGCCC CCTCGCCCCG CCACACCCCA 3120
 CCCCCGACTC CCGTGCCACT TCTCTAGGGC TGGAGGGTGG CCAGCCCTGG TGGGGGTTGC 3180
 CTACCTGCAG GTAGAGCCCA GGTCCTAGCC GGAAGTGCAC CCCATCCCTG AAGCTGCAGA 3240
 GCCAAGGGCG GGGCACACGG CAGCTCAGGC TGTCAGGCTG TTGCTGGGCT CTAGGTTCCC 3300
 AGGGACCTGG GCACCTACTT CCCACCCCCC CCATCCATTC TCTCTGGGGC CCTATCTTCC 3360
 CTTATATGGT GAAGGAAGTT CCTGGGGGGG GGGGGTGGTG GTGAGGACAA AGGTCGTTCC 3420
 GTCTCCTGCA GCCAGCTTGC CACAACTTCC TAAGATCTCC CAGGTGGTGG CTGCCTCTTC 3480

+1

exon 1

(transcription start site)

CAGACAGGTA AGGCAATTGG GTGGGGACAC ATGGTGACCA CAGGTGGTTG GAGGGGACAG 3540
 GGTCTTGCT TCTCTCTGGC AGCCTGTGCT TTCTGTAGCA CCTTGGTATA AGTTTGGGGG 3600

FIGURE 6B

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TGAGGTAAGG TGCTCTGAAA CTCTGAAAGA AGCAAGAAGC CAGCAGGCTG TCTTGGGCCT 3660
 TCAATGAAGG AAGTTCACAG ACCCCCTTTC CTGTAAGTCA CCTTCGCTTC ATCTGTGTAG 3720
 ATTCCCTGGG ACCAAGGTGG CTCCTGGGAC TCAGATTTCT ACAATTAAAA TCAGGACAGT 3780
 CCTGAGACTT GGA CTCCGTG CCTGTATTTA CTACTTCTCT CTGGCTGCTC ATTTCTGTGT 3840
 TCATGTCTTA CACATCTGAA ATGGTTTCTT TGTGTCACCA TTCCCTGAC ACTCCTGGGA 3900
 GGTCGTATCC TTGGCACATG TATCCTGGGA TGTAAGCTGC AGCCACCAGG AGAGAGGGGG 3960
 AGAGTCAGGA GCTGTGTCTT AGGCCCTATT AGGCCTGGAC ATCACCCCTT TCCTAGAAAT 4020
 GGCCCTCCA TTTTTCGGTT ACCATGATCT ATTTTATATC AGAGTGGGCA GTGAAAGCCA 4080
 AACCTGCCCC GAAGTTTGGG ACTCACTCAG ACCAAGGTTA TCTGCTCAGA AATCCCCCTG 4140
 TCACTTGAGG TTGGGAGAAT CTGCCTCTGG GGGCTTCCAG GTCTTGTTA GCAGGAGGGT 4200
 ATCCTTTGTA TAGGGCATGA CCTAGTCTAT GGTGTTACTA CATTCTGTC CAGTTAAAAG 4260
 CTGGAATAA AACCACGGC AGCGCCAGG ATTCTCTACA GTTGTACCCC AAGAACAACA 4320
 AGACAGTAGA TATGCAAGGA TAGGTAGCTG GGGAGAAGAA GAACTTAAAC CCCCCAAAG 4380
 GCCCACAGGT TCCGTTCCCT AGTTCACAAT GCCAGTATGA GTGCTAGCTA CTATGGGCTG 4440
 TGAGTTGGTA GCTACAAGCA TGAGTGATGT TCATGTGTGT AGTGTGTATA ATCTGAGCAC 4500
 TTGGGAGGCT GAAGCAGGAG GATTGCTATA TGTTTGAGGC CAGCCTGAGC TATAGAGCGA 4560
 GACTTTGTCT TTAAGAAAAA AATGAAAGCC CAGCAGTGGT GGCACACGCC TTTAATCCCA 4620
 GCACTTGGGA GGCAGAAGCA GGCAGATTTT TGAGTTCAAG GCCAGCCTGG TCTATAGAGT 4680
 GAGTTCCAGG ACAGCCAGGG CTACACAGAG AAACCCTGTT TTGAAAAACC AGAAAAACAA 4740
 AACAAAACAA AACAAAACAA AACCCTAACC CAAACCCAAA CCTCTCATCT CTCATCTCTC 4800
 TAGGCTGTGT CTGTCTAGGT GGTAGAGTTT GGGGACTTCA GACTTATATA TAAATAGGCC 4860
 TTTTATCAC TGGTCAGAGA CGAGAAAGGT TTCAGTCTGG GACACAGTGG GACCCTGAGA 4920
 AAGTACTCCT TGCCAGCCCA AAAATTCTGG GAAGGCTTCC TGGAGGAAGT GTGTCCCGAT 4980
 CAGACTACTG TTCTAGAAGG CAGAAGAGAG GGTGGAAGA ATGTTGGTGG ACAGACAGTT 5040
 GGAACAGAAG GACAGGAGGG GGAGGCATCC AAGATTCTGA ACATGTAGCT GACTTTTGGT 5100
 TCTCTGGGTG ACAAGTGTCC CCCAGGGATA GGGCTGTAGA AAGGGGACCA GGGGTGAGCC 5160
 AATGAGTTCA AGTTGAGGGA CACATCCAGC CCAGGGTCTT TGCTGGCAAG CTAAAGAATG 5220
 AGAGCCCTCT AACCCTCCCT GAAGTTTAGG GGAGACAGGA GAGCTGAGGA GATCCTTCTA 5280
 GGTGAAGGA GAGGTATCTG CTCTGACCAA CATGGCTAGG AGCAGAAGCA GTTGGACCAG 5340
 TTACCCCTCA GAACCAGCCA TCCCCTCTTG GCTCTAAGGA GGCTGGGCCC CTTTCTGTTT 5400
 AAGAATCTTA CTTTCTTCA GAGAGAGGCA GCAAGCCTTT GTCCCCTCCC TGTTGGTCAA 5460
 TAAACACCCC TGTGTGTAAC ATTAGTTTAT TTTACTGTCA GTTGCTCCA GGACAGTCCA 5520

FIGURE 6C

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TCTGGTAGAC CTCTGCTCCT AACTCACCAA GGTATGGCCC ACATTCCTCA CCCAGAAGAG 5580
 TGCAGAAGAG AGCCTTAGAG AAAGGGTAAC AGTAACAAAG ATGGCCAGAA TAAAACAAAA 5640
 ACTACTATCC TTTGTACCCA AATTGGTTTT GCTGAACCAG GAGGGGGTGT GTGAGTGTAT 5700
 GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT 5760
 CTTGGGGGAC TTTTCATGCT AAAGAATATC TGATATTGGC GCCCATGCCA ACAGGGGTAT 5820
 TGGGGAGAGT CAGGCTTCTG CAAACACAGT AAGCTGCCCC AGATGGATTG GTGGCCTGAA 5880
 TCACCAAGGG GCAGGCTGAT CAGAGTGGAC AGAACATCAC AAGATAAGCC ACCCTGTGGG 5940
 GCTCAGAAGA GGGAGTTTAC AAGAGGTAAA GGCCAAGCCA TTTATTATCC AAGACATGAC 6000
 TCAAAATCAA AGTGCAAGGA GAGATTAGCT GGAGAGATGG GGCTGTCAGT GTGGGACACC 6060
 TGACCTTGCA CTTATTAGTC ACTAGGCCAA GGAGCAGTCA CAGAGGGTGA CTGGGTCTTA 6120
 CTCAGCTTGG AGCAGGCACG TGGAGAATGG GTGACCTCCA TCCTGATGGA GAGGGCTGAG 6180
 CACCACCAGG TACAAGTGTT CCCTGTGTCT CATGCCAGGA TTCCTGGCCA GTTTTCAAAG 6240
 GACTAAGGAC TCATCTCTGG TGGAAACAAA GTATCCAAGC CCTAAGCCCC ATTTTGGTCT 6300
 AATTAAATCA GAACCCCTGG GGATGCAGGC TCTGAGCAGC AGGAGCTTTT TAAAAAGCTC 6360
 CCAGGTGATT CTGATCAGCA GCTGGAACAA ACACAGCTAC AGGTTCAAAC AGAAAGAGGC 6420
 AAAGCTAGGG AAAGCTTGGG ATGGGGAGCC TTCTTCCAGG CCAGTAGATG GAGGCTGGTT 6480
 AGCAGTGGTG GCAGCTTCTC TCTGCCTGTC ATATAGCTAT CCATCCACTC ATCCATCCAT 6540
 ACACCCACCC ATCCATTTAT GCACCCATCC TTCCATCCAT CCATCTATCC AGCTACCCAC 6600
 CCACGCATCC ATCCAAACCT TCCTTTTCTC CTTCTTTCTT TCTTTTTTCC TTCACTCATT 6660
 CATTTATCCA ACAGAGAACT GGTATTGTAC TAAATGTGGG AGATTTAATT AATTTTTAGA 6720
 AGCTCTGTTG ATTGACTGAT TGTGCATGTA TGTGGACAGG TACATACCAC AGCACACGTG 6780
 TGGCAATCGG AGAAAGGTTT TGGGTGTTGT TTTCTCTTCC CACCGTGTGG GTTCTGGGGA 6840
 TTGAACTCAA ATTATCGGGC TGGTGGCAAG TGTCTTTACC ACCGAGCCAT TTTGCTGACA 6900
 CATCATTATT ATTAGAAAGC ATCTTATGTA GTCCAGGCTG GCCTCAAGCT TGCTATGTCG 6960
 CCACGGATGA CCTTTAACTC CTGCTCTTCC AGCCTCCACC CGAGTGCTAG GTTTACAGGT 7020
 GTTCAACTGG TGAATGCCTT TAATCCCAGC ACTCTGTGGG GGGGGGGGGG GAGGCGGATC 7080
 CCTGAGTTGG AGGCCAGTTT GGTCTACAGA GTTTTCAGGAT ACCTGGGGCT ATACAGGGAA 7140
 ACCCTATCCC AAACAAACAA ACAAAACAAAC AAAAAATATT CTGTGCAATA ATCACAGAGA 7200
 TTAGAGGATA TTAGTAGGGT AGTAGGGCTG GTGAGGGAGA GTCATGCTTT CTTTGTATT 7260
 ATAATAGTAA AGTACTCACA AGATGCATTA TCTATCTATC TATCTATCTA TCTATCTATC 7320
 TATCTATCTA TCTACCTACC TACCTACCTA TCCATCCATC CATCTATCGT ATAGCCCAGG 7380
 CTGCTTTGAC TCTGAATGCT CCTATTTCTG GGTCAACTCT TCACCCCTAG TGTTGGGTTT 7440

FIGURE 6D

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ACCAACACCC AGACATTTAT TTTATTTTGT TTTATTTTAT TAATCTAGGA GCTCAGGGTG 7500
 GGACTCAGGG TCTTGTGCAT GCTAAGCAAG CTCTCTGCCA CAGAGCTGCA GCTCCAGTCC 7560
 CCATTTTGTG CAGGTGACTC TGTGACAGTT GTCATATTCG CAGCGCTATG TAGCTCTCTC 7620
 CACCTCCCAG TTCCAGCACT TTCTGGTCAT CCCAGTGGGC GGGCAACTCT GTGCTCACCA 7680
 GTGCCCTGTT CCCTGTCTTC AGACCTACAT ATTTGCCTGT CTGAACAGTT CATGTAAATG 7740
 GGATGCGTTC CTGTGTATTC TTTTATGGCT GGCCCCTTTA TCTTAGCACA GTTTGTGTTG 7800
 GGCCATGTGT CACTGCTATA CTCTATCTTA TCATCATCTT ATGGCTTAAT AGTGTTCCCT 7860
 TGTGTGGATA AACCACCTTC TGTTTCATTT ACTGATGGAA ATTTGTGGCC CCACCCCCAC 7920
 CCTTTTTTTT TTTATTTGAG ACAAGGTCTT TCTGTGTAAT CTTGCAATCT TGGCTGTCCT 7980
 GAGCTCACTC TGTAGACCAG GCTGTGAGGC TGTCTTCCA CTTTTGACAC TCCTGTGAAC 8040
 AGAGTAGCCA TGAACCTCAA AGACAAITTT CTGTTTTGGT TTGTTTTTTA CATTTGTGTG 8100
 TGTATGCGTG TATATGTGCA TGTTTGTGTC TTCAGGTGCT CACATGTGTG TACCTGTGTG 8160
 TGGGACAGAG AACAAACCGA TGTGCCATTC CTCAGATACT ACGCATCTTG TTAATATGTA 8220
 TGTATTATGT ATGTTTATTT AGTGTGCCCC AGTATGCAGG TATTTTGTG GAGTTTTCAC 8280
 CTTCCTTGT GGGCTCTCCG CATTAACTC AGCTCCTCGG GCTAGTGAGC AATGCCTTCA 8340
 CTCGATGAGC CATCTCGCTG CCCCTGCTGC CACCTCCTCC TTATTTCCCA GATGGGACTA 8400
 CGCACTGCAC TGGCCTAAAG CTCACCAAGT CATCCAGAGT GGCTAGCCAG GGAGACTCAG 8460
 GGATATGCTG GCCTCTGCCT CCACAGTGCT AGAATTACAG GCATACATCA CTGCTGGAAG 8520
 ATTTTAAACC TGAATCCTGA GGATAGAGCA GGCACCTCTAC CAATGGAGGG TTCTTTTTGT 8580
 GTTTGGTTTG GTTTCCTCTG CATAAGATCA GGCAGTCTGA AATAGTGTAG CCTGGGCTAC 8640
 ATAACATCTT GTCTCAAAAA GCCTATAGAG GTAGGGAGGT CGAGGCTAAA GAAGAGCCTT 8700
 AAGCCGGCTG TGATAGCACA CAGGATAGCC TGCATATAT AGCAAGACCT TGTTTCAAAA 8760
 ACATGGAGGG AGGGGTATGT TTTAAGTGCT GGGCTGTGTA ACAGGCACTA AGGGAGCCAA 8820
 TGTAGACATT TGAATAAGAA AGGATCATCA TCAAAGCCGG GTGGGCAGGG TAGAGGTTGG 8880
 ACTACAGTGG TCAAGACCCC CATAGGAAGC CAGTTTCCCT TCTTCCTCTG GGCCTCAAGC 8940
 CTGGCTCGAC GGCCACTGCT CTCACATGCC TTCTCCTCTA GGCTCGTCCA CCATG 8995

exon 2

FIGURE 6E

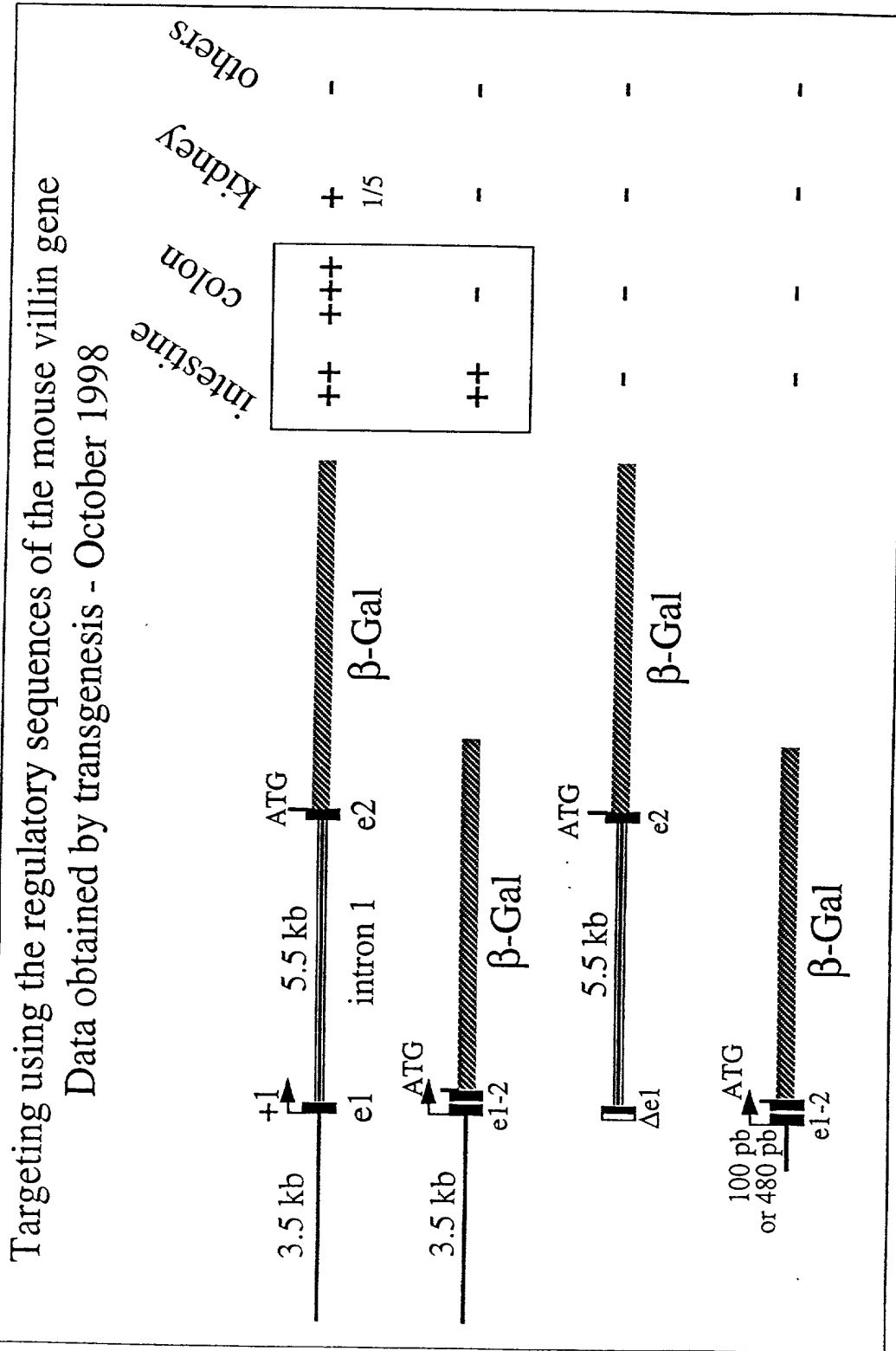


Figure 7

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Targeting of oncogenes and tumor suppressor genes

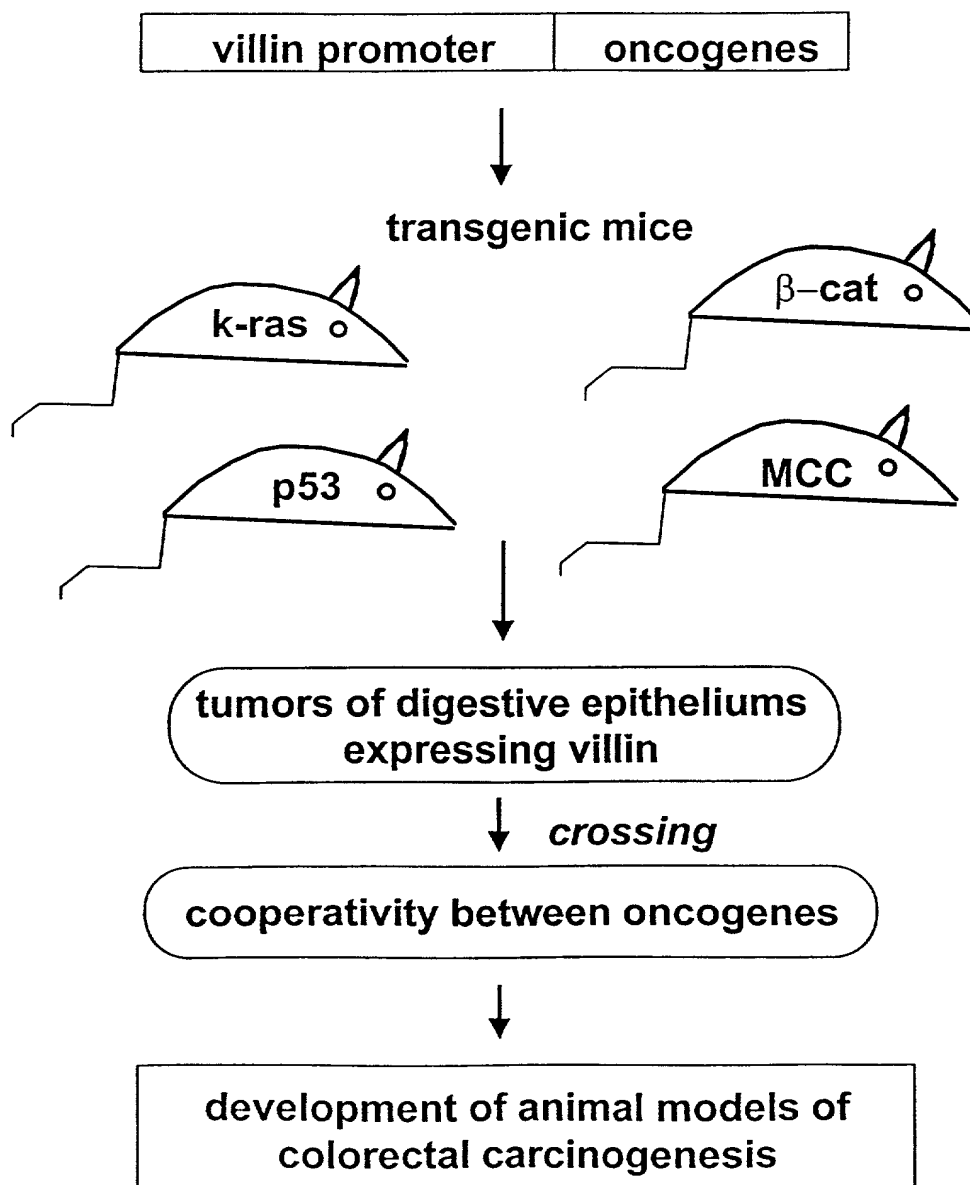


FIGURE 8A

Targeting of immortalizing gene

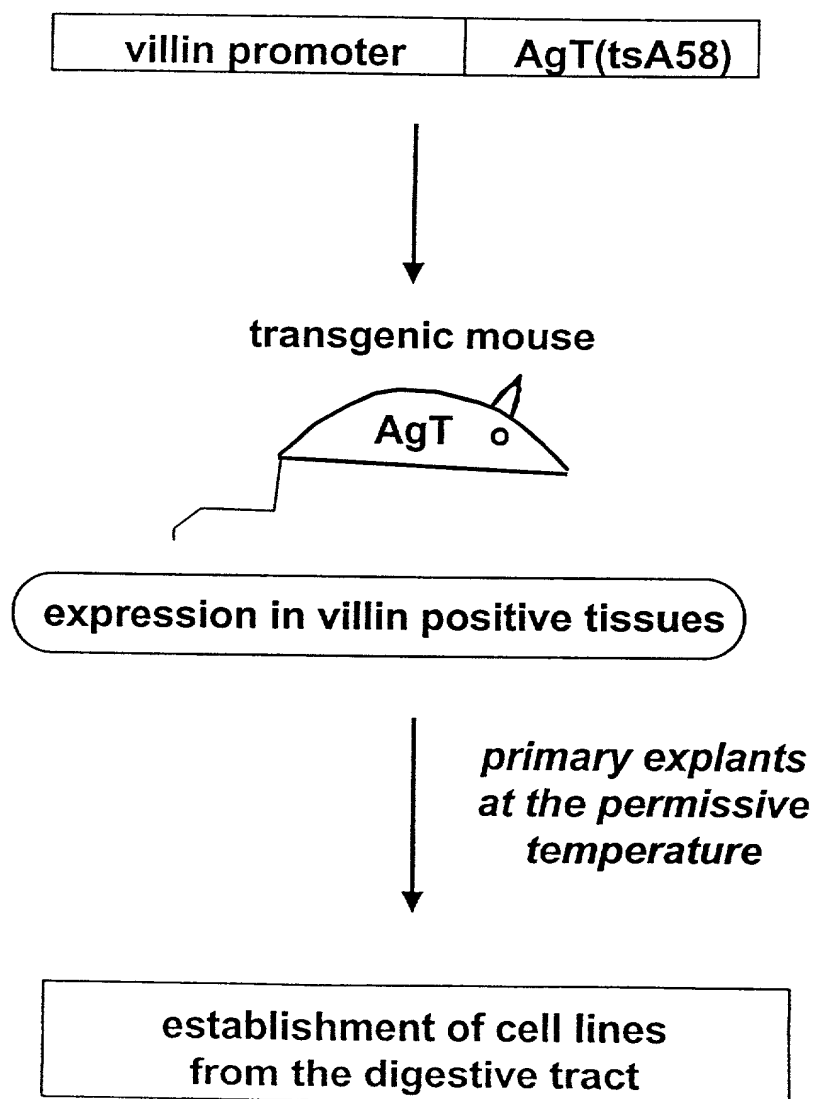


FIGURE 8B

Targeting of transactivator gene (repressor form rtTA)

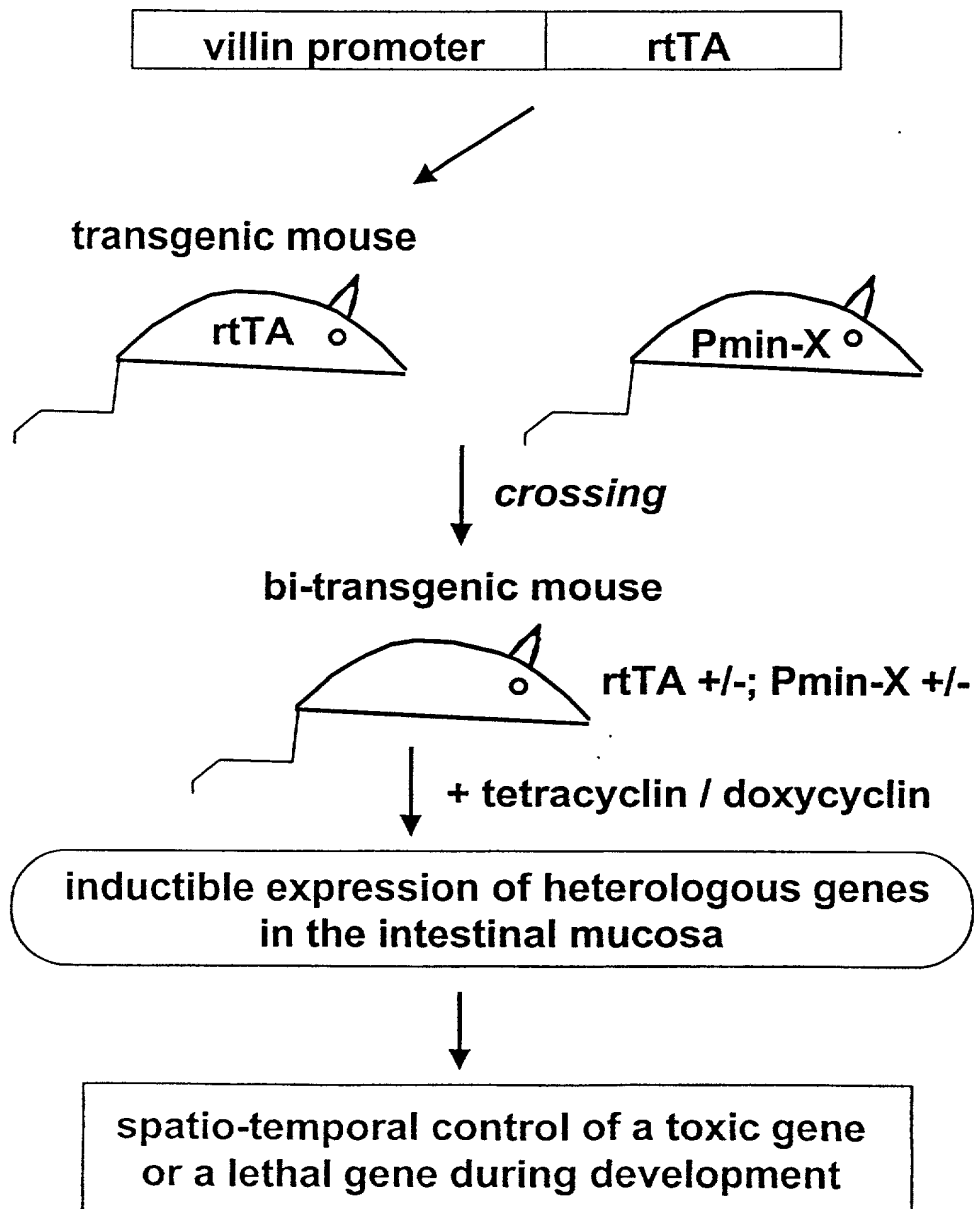


FIGURE 8C

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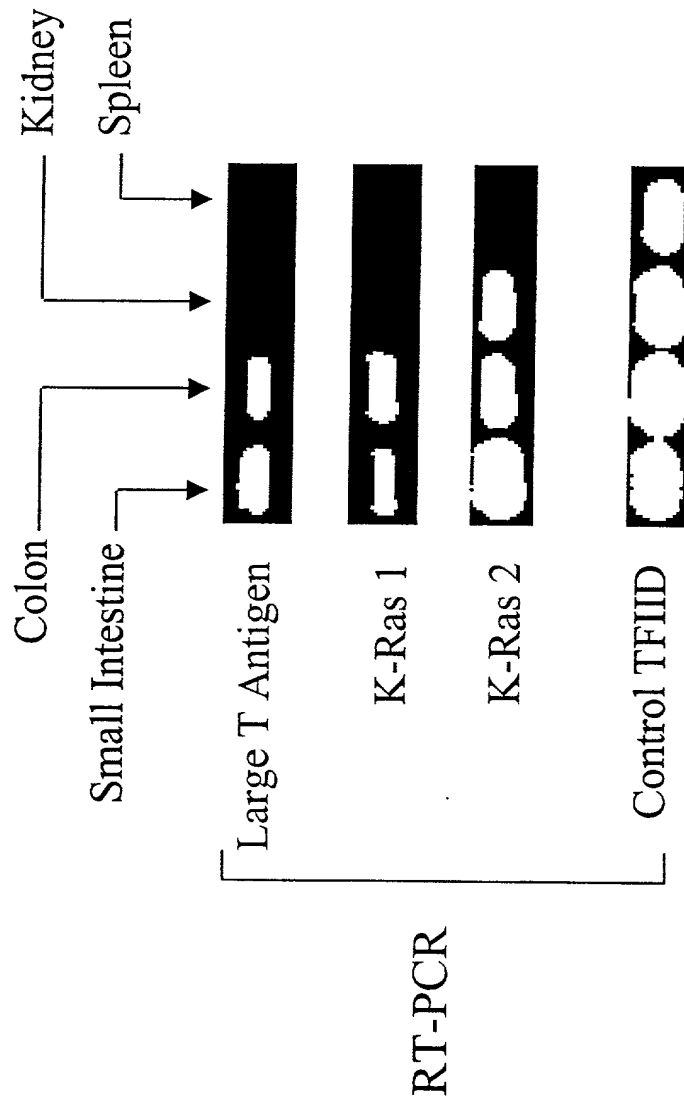


FIGURE 9